

# Michigan Journal of International Law

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Volume 19 | Issue 1

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1997

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### Recommended Citation

Bryan S. Geon, *A Right to Ice?: The Application of International and National Water Laws to the Acquisition of Iceberg Rights*, 19 MICH. J. INT'L L. 277 (1997).

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## STUDENT NOTE

# A RIGHT TO ICE?: THE APPLICATION OF INTERNATIONAL AND NATIONAL WATER LAWS TO THE ACQUISITION OF ICEBERG RIGHTS

Bryan S. Geon\*

As anyone acquainted with the *Titanic* disaster can attest, icebergs occasionally raise issues that are problematic, unforeseen, and on the cutting edge.<sup>1</sup> Such is the case with the legal regime surrounding the acquisition of rights to appropriate and use icebergs. Although it appears increasingly likely that in the future icebergs will be utilized for their water resources,<sup>2</sup> the rights and obligations of potential iceberg claimants remain unclear. Several commentators have written excellent analyses of this problem of international law;<sup>3</sup> however, these articles focus primarily on the difficulties posed by unsettled territorial claims in Antarctica and undecided questions under the Law of the Sea Convention. This note addresses a different problem: that of the appropriation of icebergs and the acquisition of iceberg rights.

International law problems associated with iceberg harvest can be divided roughly into three groups: those of acquisition; those of transport; and those of arrival at destination.<sup>4</sup> This note is only concerned with the first set of problems and makes several assumptions. First, it assumes that no international agreements regarding iceberg acquisition will have been reached prior to the first large-scale attempt to tow an iceberg.<sup>5</sup> Furthermore, the analysis assumes that these icebergs will be

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\* J.D., University of Michigan Law School (1997); B.A., Harvard University (1992). Special thanks are due to Professor Edward H. Cooper, Thomas M. Cooley Professor of Law, University of Michigan, for his comments on the original version of this note and to the editorial staff at the *Michigan Journal of International Law*.

1. On April 14, 1912, the supposedly unsinkable liner *Titanic* struck an unexpected iceberg in the North Atlantic on its maiden voyage. See WALTER LORD, *A NIGHT TO REMEMBER* 14 (1955). The iceberg ripped into the ship's hull below the waterline, and the ship sank with the loss of 1,502 lives. *Id.* at 105.

2. See discussion *infra* Part I.

3. See, e.g., Thomas R. Lundquist, *The Iceberg Cometh?: International Law Relating to Antarctic Iceberg Exploitation*, 17 NAT. RESOURCES J. 1 (1977); Christopher C. Joyner, *Ice-Covered Regions in International Law*, 31 NAT. RESOURCES J. 213, 231-37 (1991).

4. See William W. Bishop, Jr., *International Law Problems of Acquisition and Transportation of Antarctic Icebergs*, in ICEBERG UTILIZATION 586 (A.A. Hussein ed., 1978).

5. However, it seems likely that an agreement eventually would be reached if the practice became widespread; the development of new technologies for the use of water invariably

acquired on the high seas, outside any nation's territorial waters or exclusive economic zone (EEZ) and not subject to the largely unrecognized territorial claims in the Antarctic.

This note first reviews in Part I the history and potential of the idea of iceberg utilization. Part II then briefly examines the relevant sources of international law relating to iceberg acquisition. Finding that the standard sources of international law, such as conventions and international custom, currently provide inadequate guidance in this area. The note in Part III then searches for general principles embodied in the three major regimes of national water law: riparian rights, prior appropriation, and administrative allocation. Finally, it outlines in Part IV what an iceberg appropriation regime might look like under each regime.

This note does not intend to suggest that iceberg utilization is necessarily a practical or wise idea, especially in light of the unknown effects it may have on climate and the environment.<sup>6</sup> Indeed, potential environmental impacts include thermal pollution, ecosystem disruption, or even the remote, but nevertheless sobering, possibility of "a general warming trend in Antarctica, culminating in a rising sea level and attendant coastal destruction. . . ."<sup>7</sup> Even surfers could be adversely affected, as icebergs anchored offshore act as massive breakwaters.<sup>8</sup>

### I. JUST THE TIP OF THE ICEBERG: A BRIEF INTRODUCTION TO THE PLANS FOR AND POTENTIAL OF ICEBERG UTILIZATION

Experts predict that worldwide fresh water shortages will be an enormous problem in the coming decades.<sup>9</sup> Severe water shortages are

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leads to an evolution in water law. See Guillermo J. Cano, *Historical and Geographical Evolution of Water Law and its Role in the Management and Development of Water Resources*, in PROCEEDINGS: INTERNATIONAL CONFERENCE ON GLOBAL WATER LAW SYSTEMS 115, 121 (1976).

6. See Lowell Ponte, *Alien Ice: An Evaluation of Some Subsidiary Effects and Concomitant Problems in Iceberg Utilization*, in ICEBERG UTILIZATION 11 (A.A. Husseiny ed., 1978).

7. Lundquist, *supra* note 3, at 6; see also Ponte, *supra* note 6.

8. See Lundquist, *supra* note 3, at 7.

9. See Frank Clifford, *Tapped Out? Shortage of Water Looms as One of the World's Most Critical Problems in the Next Century*, L.A. TIMES, Feb. 15, 1996, at B2; see also Pamela LeRoy, *Troubled Waters: Population and Water Scarcity*, 6 COLO. J. INT'L. ENVTL. L. & POL'Y 299 (1995). Water shortages can lead not only to disease, environmental degradation, food shortages, and economic dislocation, but also to war. In the words of former United Nations Secretary General Boutros-Boutros Ghali, "[t]he next war in the Middle East will be fought over water, not politics." Priit J. Vesilind, *Water: The Middle East's Critical Resource*, NAT'L GEOGRAPHIC, May 1993, at 47. For additional perspectives on potential conflicts over

already impending in coastal and near-coastal cities such as Lagos, Cairo, Dhaka, Beijing, and Sao Paulo,<sup>10</sup> and a recent United Nations report notes that eighty countries, comprising forty percent of the world's population, are already suffering from water shortages that limit economic and social development.<sup>11</sup> As conventional water supplies dwindle under the pressures of expanding population and increasing industrialization, it appears likely that arid or overpopulated regions will seek out heretofore untapped sources of water. Barring rapid advances in the technology of, for example, solar desalination, "the potential of icebergs as a commercially exploitable resource undoubtedly will be realized."<sup>12</sup>

The amount of water contained in icebergs is immense. "[E]nough water, in the form of icebergs, breaks away from the polar cap each year to cover the annual water needs of 5 billion people: 430 cubic miles of ice, representing more fresh water than all the rivers on earth put together."<sup>13</sup> Even individual icebergs can possess almost inconceivably vast water resources; the National Aeronautics and Space Administration calculated that one iceberg it had monitored contained enough fresh water to meet California's water needs for 1,100 years.<sup>14</sup>

Such massive frozen water resources could not go unnoticed forever. Plans for harvesting icebergs for fresh water were first floated seriously in the 1950s.<sup>15</sup> It was not until the 1970s, however, that the

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water rights, see generally Raed M. Fathallah, *Water Disputes in the Middle East: An International Law Analysis of the Israel-Jordan Peace Accord*, 12 J. LAND USE & ENVT'L. L. 119, 120-26 (1996) (discussing tensions over water resources in the Middle East); Christopher L. Kukuk & David A. Deese, *At the Water's Edge: Regional Conflict and Cooperation Over Fresh Water*, 1 UCLA J. INT'L L. & FOREIGN AFF. 21 (1996) (analyzing how water scarcity can lead to conflict and the possibilities for cooperation); Niveen Tadros, Comment, *Shrinking Water Resources: The National Security Issue of This Century*, 17 NW. J. INT'L L. & BUS. 1091 (1996-97) (examining the possibilities of avoiding tension over the shortage of fresh water in the Nile River Basin States).

10. *The Megacity Summit*, N.Y. TIMES, Apr. 8, 1996, at A14.

11. Paul Lewis, *U.N. Report Warns of Problems over Dwindling Water Supplies*, N.Y. TIMES, Jan. 20, 1997, at A6.

12. Andrew N. Davis, *Protecting Antarctica: Will a Minerals Agreement Guard the Door or Open the Door to Commercial Exploitation?*, 23 GEO. WASH. J. INT'L L. & ECON. 733, 747 n.97 (1990).

13. Lynde McCormick, *Iceberg Power*, CHRISTIAN SCI. MONITOR (Midwestern Ed.), May 29, 1980, at B8.

14. See Walter Sullivan, *Iceberg Aground After Ten Years At Sea*, N.Y. TIMES, Apr. 19, 1977, at 39. This iceberg was hardly unique. Satellites tracked one iceberg the size of Massachusetts for six years until it broke up. See Jon Carroll, *A Thousand Flavors of Ice*, S.F. CHRON., Dec. 28, 1995, at C16. In 1995, an iceberg the size of England's Oxfordshire (approximately 1,000 square miles) calved off the Larsen Iceshelf. See Nick Nuttall, *Stray Iceberg May Herald Worldwide Coastal Flooding*, TIMES (London), Feb. 28, 1995, at 8.

15. See Jesse C. Burt, *Iceberg Water for California?*, SCIENCE DIGEST, Feb. 1956, at 1-4. The transport of icebergs is not a novel concept, however. In the 1890s, small icebergs

idea of iceberg utilization on a large scale became both plausible and relatively respectable. In 1977, under Saudi Arabian sponsorship, Iowa State University hosted the First International Conference and Workshops on Iceberg Utilization for Fresh Water Production, Weather Modification and Other Applications.<sup>16</sup> Despite the daunting technological and financial obstacles to iceberg use, the general mood of the conferees was one of boundless optimism, as exemplified by the following prediction that within a year or two of making the decision to tow icebergs:

any arid lands around the world, could be free of continuous droughts. . . . Ice from Antarctica, containing drinking water of distilled purity, would prove itself the worthy servant of man. There is an endless supply of icebergs and the future holds great promise for turning arid, barren lands into rich, fertile valleys.<sup>17</sup>

In addition, the Saudi Arabian prince who sponsored the conference said he hoped to have a one hundred million ton iceberg towed to Saudi Arabia by 1982.<sup>18</sup>

While none of these grand visions came to pass, the concept continued to inspire the creative and the desperate. In 1980, a Californian inventor proposed to move a self-propelled<sup>19</sup> iceberg from the Antarctic to California, Mexico, or India.<sup>20</sup> During the California drought of the

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were towed from Laguna San Rafael to Valparaiso, Chile and from the Antarctic to Callao, Peru. See Jerry Rosenberg, *An Overview of the Organizational, Management, Economic and Socio-Political Aspects of Transporting Icebergs from Antarctica to the United States*, in ICEBERG UTILIZATION 616, 617 (A.A. Hussein ed., 1978).

16. The proceedings of this Conference are collected in ICEBERG UTILIZATION (A.A. Hussein ed., 1978) (the Conference brought together experts in a variety of fields to highlight engineering, environmental, and financial issues, as well as legal issues, affecting iceberg use).

17. Rosenberg, *supra* note 15, at 622. But see Henri Bader, *A Critical Look at the Iceberg Utilization Project*, in ICEBERG UTILIZATION 34 (A.A. Hussein ed., 1978) (providing a less rhapsodic view).

18. Otto Knauth, *Saudi Plans Ice-Towing Project*, WASH. POST, Oct. 7, 1977, at A5; see also *Watery Wealth at Stake*, ECONOMIST, May 13, 1978, at 87 (the same prince claiming Saudi Arabia would tow icebergs by 1980). The prince's project has not yet been realized.

Saudi Arabia is not the only Middle Eastern nation to explore the idea of using icebergs for water; both Kuwait and Bahrain have investigated the prospect. See Mariam Alkhalifa, *Oil-Rich Gulf States May Soon Run Out of Water*, REUTERS, Apr. 26, 1988, available in LEXIS, World Library, Reuwl File; see also Rory Channing, *Oil-Rich Kuwait Dusts Off Plans to Import Water from Neighbour*, REUTERS, June 5, 1986, available in LEXIS, World Library, Reuwl File.

19. The thermal difference between the temperature of the ice and the temperature of the surrounding water could be harnessed to power a turbine. See McCormick, *supra* note 13, at B8.

20. See *id.* The Australian cities of Perth and Adelaide also expressed serious interest in this plan. See *id.*

early 1990s, icebergs were frequently mentioned as a possible water source.<sup>21</sup> And in the midst of Britain's severe 1992 water shortage, the National Rivers Authority considered, then rejected, a plan to tow icebergs from the Arctic.<sup>22</sup> In the realm of fiction, the idea proved sufficiently compelling to prompt one popular writer to set a recent novel in a near-future world where scientists attempt to mitigate severe droughts by harvesting icebergs from Greenland.<sup>23</sup> And suggestions for iceberg use have not been limited to domestic and agricultural uses of melted ice: among many past proposals appear plans to use icebergs as aircraft carriers,<sup>24</sup> power generators,<sup>25</sup> hurricane stoppers,<sup>26</sup> and even augmenters of the water of the Great Lakes.<sup>27</sup>

To date, icebergs have not been towed and used for any of the above purposes. However, the variety and persistence of the ideas outlined above, combined with increasing shortages of water worldwide, suggest a substantial likelihood that it will happen sometime in the future. Indeed, a Canadian company is already manufacturing vodka made with

21. See, e.g., John Gaines, *The California Drought*, SAN DIEGO UNION-TRIBUNE, Mar. 17, 1991, at B1. The city of Ventura, north of Los Angeles, spent several thousand dollars researching the feasibility of importing an iceberg. See Santiago O'Donnell, *The Iceberg Cometh*, L.A. TIMES (Ventura County Ed.), June 6, 1990, at B1. Even the California Legislature weighed in; it passed a resolution urging federal agencies to support a pilot program to use Antarctic icebergs to augment California's water supply. See Dixie Reed, *Long On Odds*, SACRAMENTO BEE, July 22, 1993, at D3.

22. See Robert Bedlow, *Iceberg Water Plan Rejected*, DAILY TELEGRAPH (London), Mar. 12, 1992, at 5.

23. See DEAN KOONTZ, *ICEBOUND* (1995). Koontz was not the first author to exploit this compelling scenario. Indeed, Koontz's plot is remarkably similar to that in DAVID AXTON, *PRISON OF ICE* (1976). *Prison of Ice* stars an Arctic iceberg destined for the relief of a drought-stricken world. (This particular iceberg features a trapped team of scientists, chained to bombs that are about to explode, and a homicidal maniac.) Other fanciful tales of iceberg use include one Portuguese newspaper's prediction that in 2000, Portugal would begin towing icebergs to deal with a water shortage created by Spain's diversion of water from the Douro and Guadiana rivers. See *Wait for it—Lisbon Paper Predicts News in 2000*, REUTERS, July 10, 1994, available in LEXIS, World Library, Reuwl File.

24. The Allies seriously explored this idea during the Second World War. See Salah Galal, *The Challenges of Iceberg Utilization*, in *ICEBERG UTILIZATION* 8 (A.A. Hussein ed., 1978).

25. See David M. Roberts, *Icebergs as a Heat Sink for Power Generation*, in *ICEBERG UTILIZATION* 674 (A.A. Hussein ed., 1978).

26. The idea is that a huge mass of ice will cool and therefore slow the progress of hurricanes in tropical areas such as Florida and Australia. See Joanne Simpson, *Iceberg Utilization: Comparison with Cloud Seeding and Potential Weather Impacts*, in *ICEBERG UTILIZATION* 624, 630-34 (A.A. Hussein ed., 1978).

27. Such augmentation would be required if Great Lakes water were diverted for other purposes. See Julia R. Wilder, Note, *The Great Lakes as a Water Resource: Questions of Ownership and Control*, 59 IND. L.J. 463, 470 n.36 (1984). It is unclear, however, how the icebergs would successfully move up the St. Lawrence Seaway and through the shipping locks between the upper Great Lakes.

water from small icebergs captured in Newfoundland.<sup>28</sup> When large-scale iceberg use begins, it will occur in what is essentially a legal vacuum; despite some thoughtful analyses,<sup>29</sup> the regime under which nations may acquire the right to use icebergs is far from clear. Since iceberg harvest and transport will probably occur almost entirely outside national waters, the first place to look for clarification is international law.

## II. INTERNATIONAL LAW

The Statute of the International Court of Justice concisely enumerates the generally accepted sources of international law.<sup>30</sup> These sources include "*international conventions*, whether general or particular, establishing rules expressly recognized by . . . states," "*international custom*, as evidence of a general practice accepted as law," and "the *general principles* of law recognized by civilized nations."<sup>31</sup> It is thus useful to examine the role of each of these sources in creating a legal framework for iceberg acquisition.

### A. *International Conventions*

To date, there exist no international conventions or declarations specifically respecting the acquisition, transport, or use of icebergs. There are many existing treaties relating to rights to transboundary or bordering rivers and lakes or shared groundwater resources.<sup>32</sup> However, these treaties are almost always bilateral or regional and cover only an individual river or lake basin or a specific groundwater resource.<sup>33</sup> As such, the existing water treaties seem largely inapposite to the global issue of

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28. See *Iceberg on the Rocks*, DAILY NEWS (Durban, South Africa), Oct. 8, 1996, at 13. The idea materialized after the company's director read about a proposal to tow icebergs to Saudi Arabia. Ironically, he is pessimistic about the prospects for iceberg exploitation on that scale, stating that, "Unless God is your cousin, you aren't getting an iceberg to Saudi Arabia no matter what." *Id.*

29. See *supra* note 5 and accompanying text.

30. See Statute of the International Court of Justice, June 26, 1945, art. 38, 59 Stat. 1055, T.S. No. 993; see also RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS OF THE UNITED STATES § 102 (1987) [hereinafter RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS]; LOUIS HENKIN ET AL., INTERNATIONAL LAW CASES AND MATERIALS 51-54 (3d ed. 1993).

31. Statute of the International Court of Justice, *supra* note 30 (emphasis added).

32. See DANTE A. CAPONERA, PRINCIPLES OF WATER LAW AND ADMINISTRATION: NATIONAL AND INTERNATIONAL 60-61 (1992) (noting that there are "thousands" of transboundary water resource treaties) [hereinafter PRINCIPLES OF WATER LAW].

33. See generally Dante A. Caponera, *The Law of International Water Resources*, Food and Agriculture Organization of the U.N., Legislative Study No. 23 (1980) (summarizing dozens of major agreements and cases relating to international water law); see also PRINCIPLES OF WATER LAW, *supra* note 32.

rights to iceberg water. Only a few States are parties to each treaty, and, furthermore, these treaties allocate relatively predictable amounts of liquid water within discrete geographical areas and defined borders. Icebergs, by contrast, potentially may be of interest to all States (or at least coastal States), vary in number from year to year, occur in both the Arctic and Antarctic, and drift widely through territorial waters and high seas.

Despite the dearth of pertinent treaties, two agreements already in force, the Law of the Sea Convention and the Antarctic Treaty System, may circumscribe a nation's potential right to acquire icebergs.

### 1. The Law of the Sea

The Law of the Sea Convention does not explicitly discuss icebergs.<sup>34</sup> However, several of its provisions are relevant to iceberg acquisition. The Convention fixes the outer limit of a nation's territorial sea at no more than twelve nautical miles from baseline (usually the low-water line along the coast)<sup>35</sup> and recognizes a nation's sovereignty within that territorial sea.<sup>36</sup> The proposition that a State has the exclusive right to appropriate icebergs within its own territorial sea would appear uncontroversial.<sup>37</sup> The Convention also recognizes the right of a State to declare an EEZ of up to two hundred nautical miles from baseline.<sup>38</sup> Within this EEZ, a coastal nation has "sovereign rights for the purpose of . . . exploiting . . . the natural resources . . . of the waters superjacent to the sea-bed . . . and with regard to other activities for the economic exploitation and exploration of the zone . . . ."<sup>39</sup> While it is nowhere discussed in the Convention, the harvesting of icebergs, which certainly are natural resources, would seem to fall within the range of activities reserved to a State within its EEZ, and commentators generally have so agreed.<sup>40</sup>

The final applicable provision of the Convention is its codification of a freedom of the seas approach: subject to the rules of international

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34. See Convention on the Law of the Sea, Dec. 10, 1982, 21 I.L.M. 1261 [hereinafter Law of the Sea]. Besides failing to discuss icebergs, the Law of the Sea Convention has relatively few parties. See M.J. BOWMAN & D.J. HARRIS, MULTILATERAL TREATIES: INDEX AND CURRENT STATUS 1982 (11th Cumulative Supp. 1995).

35. See Law of the Sea, arts. 3, 5.

36. See *id.*, art. 2.

37. See, e.g., Lundquist, *supra* note 3, at 22-23.

38. See Law of the Sea, *supra* note 34, art. 57.

39. *Id.*, art. 56.

40. See, e.g., Bishop, *supra* note 4, at 587. It has been suggested that States probably would be willing to join or license the activity, since icebergs coming close to shore are in any case a potential threat to navigation. See Jean-Pierre Chamoux, *Some International Implications of Iceberg Transfer*, in ICEBERG UTILIZATION 597, 599 (A.A. Hussein ed., 1978).



law, "[t]he high seas are open to all States, whether coastal or land-locked."<sup>41</sup> This note supposes that the right to appropriate icebergs on the high seas, although currently without a governing legal regime, is relatively unproblematic from a legal point of view (in part, because of the lack of applicable law or any specific prohibition). This notion, however, is not wholly free of controversy.<sup>42</sup> For example, some commentators believe that activities conducted on the high seas, such as iceberg harvesting, are only permissible if they can be shown affirmatively to be allowed under international custom<sup>43</sup> or by treaty.<sup>44</sup>

## 2. The Antarctic Treaty

Because ninety percent of the world's ice frozen from fresh water is found in Antarctica,<sup>45</sup> the Antarctic Treaty System would seem to play a large part in determining the rights and responsibilities of iceberg claimants. In actuality, however, the Antarctic Treaty has nothing to say about icebergs in particular or resource extraction in general.<sup>46</sup> It merely reserves Antarctica solely for peaceful purposes and promotes freedom of scientific investigation and international information exchange.<sup>47</sup> More problematically, the Treaty explicitly avoids mandating the "renunciation by any Contracting Party of previously asserted rights of or claims to territorial sovereignty in Antarctica;"<sup>48</sup> instead, it freezes the status quo. As several commentators have observed, the unresolved

41. Law of the Sea, *supra* note 34, art. 87.

42. See Lundquist, *supra* note 3, at 23–26.

43. See discussion *infra* Part II.B.

44. See C. JOHN COLOMBOS, *THE INTERNATIONAL LAW OF THE SEA* 7, 8 (6th ed. 1967).

45. See John L. Hult, *The Global Role of Iceberg Exploitation*, in *ICEBERG UTILIZATION* 29, 30 (A.A. Hussein ed., 1978).

46. Some attempts have been made to address the issue of mineral extraction in Antarctica. See generally Andrew N. Davis, Note, *Protecting Antarctica: Will a Minerals Agreement Guard the Door or Open the Door to Commercial Exploitation?*, 23 *GEO. WASH. J. INT'L L. & ECON.* 733 (1990) (discussing negotiations for a Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA)).

47. See Antarctic Treaty, Dec. 1, 1959, arts. I–III, 12 U.S.T. 794, 795–96. Article 1 provides that "Antarctica shall be used for peaceful purposes only," and bans, "*inter alia*, any measures of a military nature, such as the establishment of military bases and fortifications, the carrying out of military maneuvers, as well as the testing of any type of weapons." *Id.* at 795. Article 1 specifically permits "the use of military personnel or equipment for scientific research or for any other peaceful purpose"—including, presumably, the towing of icebergs for use as fresh water. *Id.* Article II enshrines "[f]reedom of scientific investigation in Antarctica," while Article III encourages the sharing of scientific information and the establishment of cooperation. *Id.* at 795–96. Nothing in these articles implies that iceberg utilization might be forbidden in the Antarctic. The Treaty might be construed as banning certain methods of iceberg exploitation; for example, Article V, which prohibits nuclear explosions in Antarctica, would preclude the use of nuclear weapons to dislodge icebergs from the Antarctic ice cap. See *id.* at 796.

48. *Id.*, art. IV.

status of territorial claims in Antarctica presents a major obstacle to the establishment of a clear legal regime for iceberg acquisition.<sup>49</sup>

The range of legal regimes in Antarctica under which iceberg appropriation might take place has been fully and competently discussed elsewhere<sup>50</sup> and is beyond the scope of this note. For purposes of this discussion, it is assumed that territorial claims in the Antarctic will not pose an obstacle to iceberg appropriation because territorial claims may ultimately be resolved, claimant States may appropriate icebergs themselves, permission could be obtained from or license fees paid to claimant States, icebergs drift so widely that at some point they will leave even the claimed EEZs of ostensible Antarctic territories, and the Antarctic is not the only region in the world where icebergs can be found.

### B. *International Custom*

Custom springs from the practices of States.<sup>51</sup> Because no State has yet acquired and transported a large iceberg, it would appear that custom has no immediate bearing on legal questions involving the acquisition of iceberg rights.<sup>52</sup> Nevertheless, custom remains an important consideration because the practices of States that begin to tow icebergs may eventually ripen into a recognized custom. It is necessary, therefore, to recognize any proposed iceberg regime's potential to create or shape customary international law.

Generally, two tests must be satisfied before conduct can evolve into a customary rule of international law. First, there must usually be a recurrence or repetition of the conduct that spawns the customary rule; a single act almost never results in customary law.<sup>53</sup> Second, the recurrence must develop into an expectation that the conduct will be repeated in similar situations, as a matter of right and obligation entitled to deference

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49. See Steven J. Burton, *Legal/Political Aspects of Antarctic Iceberg Utilization*, in ICEBERG UTILIZATION 604, 605-07 (A.A. Hussein ed., 1978); J.A. Heap, *Current and Future Problems Arising From Activities in the Antarctic*, in THE ANTARCTIC TREATY REGIME: LAW, ENVIRONMENT AND RESOURCES 201, 206-10 (Gillian D. Triggs ed., 1987).

50. See Lundquist, *supra* note 3, at 13-21; see also Joyner, *supra* note 3, at 232-37.

51. See RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS, *supra* note 30, at § 102(2); HENKIN, *supra* note 30, at 54; J. STARKE, INTRODUCTION TO INTERNATIONAL LAW 34-41 (10th ed. 1989).

52. For a discussion of the interaction between custom and international water law in general, see Ludwik A. Teclaff, *Fiat or Custom: The Checkered Development of International Water Law*, 31 NAT. RESOURCES J. 45, 63-65 (1991).

53. See RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS, *supra* note 30, at § 102 cmt. b; HENKIN, *supra* note 30, at 62; STARKE, *supra* note 51, at 38-39.

by other States.<sup>54</sup> Therefore, the response of nations to a given practice, such as a claim to iceberg rights, may determine whether that practice evolves into a customary rule.<sup>55</sup> For example, if an iceberg-towing State makes a claim of prior appropriation, so that it has first choice of icebergs in a given year,<sup>56</sup> an otherwise acquiescent nation might wish to make it clear that it accepts the towing State's claim as a matter of courtesy, not as a recognition of right. Such acceptance may preclude a practice from becoming recognized as customary law.

Finally, it is possible, but unlikely, that a custom may already exist in the form of similar rules on a national level. "A concurrence, although not a mere parallelism, of state laws . . . or of state practices may indicate so wide an adoption of similar rules as to suggest the general recognition of a broad principle of law."<sup>57</sup> An analysis of State laws appears below.<sup>58</sup>

### C. General Principles

General principles of law operate to fill the gaps left in international law after conventions and custom have been considered.<sup>59</sup> Given the general absence of international conventions and custom regarding iceberg acquisition, general principles would seem to loom large in positing a legal regime for iceberg acquisition. While there exists no general consensus about what constitutes a general principle and what force such principles exert upon the international community, most writers acknowledge that general principles constitute a separate, but limited, source of international law.<sup>60</sup> However, there is disagreement over "whether what is involved is a general principle of law appearing in [national] systems or a general principle of international law."<sup>61</sup>

No general principle of iceberg acquisition exists in international law, primarily because no nation has yet attempted to stake a claim to icebergs. There are, however, general principles of international water law that, by analogy, could serve to limit a State's right to appropriate icebergs. The International Law Commission identifies the duties of

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54. See RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS, *supra* note 30, at § 102 cmt. c; HENKIN, *supra* note 30, at 74; STARKE, *supra* note 51, at 38-39.

55. See RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS, *supra* note 30, at § 102 cmt. d; HENKIN, *supra* note 30, at 62.

56. For illustrations of how this might occur, see discussion *infra* Part IV.B.

57. STARKE, *supra* note 51, at 37; accord HENKIN, *supra* note 30, at 62.

58. See discussion *infra* Part III.

59. See RESTATEMENT (THIRD) OF THE FOREIGN RELATIONS, *supra* note 30, at §§ 102(1)(c), 102(4), cmt. l; HENKIN, *supra* note 30, at 104.

60. See M.N. SHAW, INTERNATIONAL LAW 82 (2d ed. 1986).

61. *Id.*

riparian States on international water courses as encompassing the general principles of equitable and reasonable use and the obligation not to cause harm.<sup>62</sup> While these principles presumably might evolve to include iceberg harvesting activities, they probably would not apply until there was some competition for the use of the resource.<sup>63</sup> Furthermore, these principles do not amount to a positive statement about the right to acquire icebergs, but only serve to limit the exercise of such a right.

Principles emanating from national law are a second source of general principles in international law. It is to an examination and analysis of these principles in the context of water law that the remainder of this note is dedicated.

### III. NATIONAL WATER LAW: A COMPARISON OF LEGAL REGIMES

There is a dearth of national or regional legislation that specifically discusses appropriation of icebergs. However, there exist a few other sources of law that encompass icebergs or floating ice, at least obliquely. Most of these sources merely suggest that jurisdiction may be asserted over ice. For example, in *United States v. Escamilla*, a United States citizen was tried for the murder of a member of a scientific group on an ice island in the Arctic Ocean, two hundred miles off the Canadian shoreline.<sup>64</sup> The basis for United States jurisdiction seemed to be a combination of the ice island constituting high seas and the international law principle of personal jurisdiction.<sup>65</sup> Although the position of Canada (a country with no lack of ice over which to assert jurisdiction) is ambiguous,<sup>66</sup> at least one Canadian court has asserted that "sea-ice,

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62. See *Report of the International Law Commission on the Work of Its 46th Session*, International Law Commission, U.N. GAOR, 49th Sess., Supp. No. 10, arts. 5-7, at 218-44, U.N. Doc. A/49/10 (1994) (containing, among other things, the International Law Commission's Draft Articles on the Law of the Non-navigational Uses of International Watercourses) [hereinafter *Report of ILC*]. Draft article 2(b) defines a watercourse as "a system of surface waters and groundwaters constituting by virtue of their physical relationship a unitary whole and normally flowing into a common terminus." *Id.* at 199. Draft article 2(a) defines an international watercourse as a "watercourse, parts of which are situated in different States." *Id.*

63. "With the large magnitude of Antarctic icebergs and infant harvesting technology, the reasonableness standard is not expected to be a serious constraint in the near future." Lundquist, *supra* note 3, at 25.

64. 467 F.2d 341 (E.D. Va. 1972). For a thorough discussion of the case, see ANDREAS G. RONHOVDE, *JURISDICTION OVER ICE ISLANDS: THE ESCAMILLA CASE IN RETROSPECT* (1972).

65. See DONAT PHARAND, *THE LAW OF THE SEA OF THE ARCTIC* 202-04 (1973).

66. See Susan B. Boyd, *The Legal Status of the Arctic Sea Ice: A Comparative Study and a Proposal*, 1984 CAN. Y.B. INT'L L. 98, 103-11 (1984) (discussing two competing theories of jurisdiction: one based on the nature of the sea ice and one based on the sea ice's position in relation to Canadian territory).

extending off from the land, is within the jurisdiction of the government of Canada."<sup>67</sup> Both of these cases suggest that a country may claim jurisdiction over ice, at least in certain circumstances, and thus that the ephemeral nature of ice, which ultimately melts, does not render it immune from territorial claims. These cases, however, do not discuss the appropriation of ice for use.

A few jurisdictions seem to recognize a right to appropriate ice generally. The State of Alaska appears to recognize a right of prior appropriation of icebergs and glacial ice under state law.<sup>68</sup> This recognition provides the only straightforward example of the application of a water law regime to iceberg appropriation. In addition, the Supreme Court of Canada long ago stated that lake ice may be appropriated by the person who owned the soil below the water, or if no one owned the soil, by the person who "reduced it into possession as an article of personal property."<sup>69</sup> While this decision does not apply directly to icebergs, it provides a wonderful (and prescient), if entirely unintentional, analogy to possible iceberg appropriation: the State who has the right to the use of the seabed in territorial waters and the EEZ owns the icebergs above it, while on the high seas, the owner is the one who effectively appropriates the iceberg.

While these few sources of law provide a brief glimpse of how ice might be treated in national (and, by extension, international) law, they hardly qualify as general principles. It is more fruitful to consider the treatment of appropriation of liquid water in national water law. All countries have some regime of appropriation and distribution of water, whereas natural ice does not regularly occur in many regions of the world. In addition, by considering the laws of a greater number of States, it may be easier to derive general principles common to many countries.

Further pursuit of general principles of national water law that might be applicable to iceberg appropriation first requires a brief examination of the three major regimes of water rights acquisition: riparian rights, prior appropriation, and administrative allocation.

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67. *Regina v. Tootalik*, 71 W.W.R. 435, 443 (1969), *rev'd on other grounds*, 74 W.W.R. 740 (Terr. Ct. N.W.T. 1970).

68. See Thomas E. Meacham, *In the States: Alaska*, 21 WATER L. NEWSL., no. 3 (Rocky Mountain Mineral Law Found.), 1988, at 4.

69. *Lake Simcoe Ice & Cold Storage Co. v. D.W. McDonald* [1900] 31 S.C.R. 130, 133-34 (opinion of J. King).

### A. Riparian Rights

A riparian rights regime bases the right to use water on a user's proximity to the water source.<sup>70</sup> "In its widest scope, the riparian rights system embraces all those situations in which the right itself or the claim to obtain a right to use water belongs only to those who possess access to the water through ownership of land abutting on a stream."<sup>71</sup> This regime's origins are in Roman law,<sup>72</sup> but it reached its greatest development in Great Britain and the eastern United States. Certain aspects of the riparian regime are also found in other legal regimes, usually complementing an administrative allocation scheme.<sup>73</sup>

The riparian rights regime encompasses two main doctrines. In Great Britain and the United States, the riparian rights system long operated under the natural flow doctrine. This doctrine entitled a riparian landowner to take water for domestic purposes only,<sup>74</sup> and a riparian had "the right to expect the water to flow to him in its natural and undiminished state."<sup>75</sup> As industrial and agricultural uses of water increased, the doctrine of reasonable use gained acceptance; under this doctrine, "each riparian proprietor has a privilege to make a reasonable use of water for any purpose, provided his use does not cause harm to the reasonable uses of others. Each riparian must make his use in a manner that will accommodate as many other uses as possible . . ."<sup>76</sup> However, a preference for, but not a restriction to, domestic uses remains.<sup>77</sup> "The major

70. See PRINCIPLES OF WATER LAW, *supra* note 32, at 82 ("The owner or occupier of land adjacent to a natural stream is entitled *jure naturae* (i.e., by the law of nature) to the use and enjoyment of the water flowing past his land as an incident of his ownership or occupation of such land.").

71. Ludwik A. Teclaff, *Abstraction and Use of Water: A Comparison of Legal Regimes*, at 8, U.N. Doc. ST/ECA/154 (1972) [hereinafter *Comparison of Legal Regimes*].

72. Although Roman law was the progenitor of the administrative allocation regime, see *infra* notes 97-99 and accompanying text, it did not allow involuntary servitudes of access. See *Comparison of Legal Regimes*, *supra* note 71, at 19. Therefore, as in the riparian regime, only those who owned land abutting a stream had the right to use water. See *id.*

73. Often, these riparian-like elements were exported to British colonies and adopted into their domestic law. See *id.* at 42-45; see also W.J. VOS, PRINCIPLES OF SOUTH AFRICAN WATER LAW 6 (2d ed. 1978) (discussing elements of riparianism in South African law). French law also contains elements of riparianism. See *Comparison of Legal Regimes*, *supra* note 71, at 34.

74. See *Harris v. Brooks*, 283 S.W.2d 129, 133 (Ark. 1955).

75. *Comparison of Legal Regimes*, *supra* note 71, at 11.

76. RESTATEMENT (SECOND) OF TORTS: INTERFERENCE WITH THE USE OF WATER, introductory note at 211 (1979) [hereinafter RESTATEMENT (SECOND) OF TORTS].

77. See *Harris v. Brooks*, 283 S.W.2d at 134 (arguing "[t]he right to use water for strictly domestic purposes—such as for household use—is superior to many other uses of water—such as for fishing, recreation and irrigation."); accord VOS, *supra* note 73, at 4 (stating that in South African law "[p]rimary use was for the support of human and animal life; secondary use was for other purposes").

advantage of this theory is that it tends to promote the beneficial use of water resources."<sup>78</sup> The reasonable use doctrine is thus more flexible but less certain than the natural flow doctrine and has become the dominant doctrine in most riparian jurisdictions.<sup>79</sup>

In the eastern United States, riparianism is still the common law water rights system.<sup>80</sup> However, in most traditionally riparian states, a network of statutes and permit requirements have been superimposed upon the traditional riparian rights system.<sup>81</sup> In such states, "these statutes, rather than the common law, are the important features of modern water law."<sup>82</sup> Great Britain has essentially abolished its riparian system, replacing it with an administrative scheme.<sup>83</sup>

### B. Prior Appropriation

The doctrine of prior appropriation was developed in the western United States,<sup>84</sup> which is still virtually the only place in the world where it is used.<sup>85</sup> The attributes of the prior appropriation system, succinctly stated, are as follows:

A property right to use water is created by diversion of the water from a stream (or lake) and its application to a beneficial use. Water can be used at any location, without regard to the position of place of use in relation to the stream. In the event of a shortage of supply, water will be supplied up to a limit of the

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78. RESTATEMENT (SECOND) OF TORTS, *supra* note 76.

79. *See id.*

80. *See* PRINCIPLES OF WATER LAW, *supra* note 32, at 126.

81. *Id.* at 127.

82. GEORGE A. GOULD & DOUGLAS L. GRANT, WATER LAW 7 (5th ed. 1995).

83. In 1963, Great Britain instituted a licensing requirement for water abstraction, although it did retain some features of riparianism. *See Comparison of Legal Regimes, supra* note 71, at 41-42.

84. The case usually considered to be the origin of the doctrine is *Irwin v. Phillips*, 5 Cal. 140 (1855).

85. Trelease claims that prior appropriation exists not only in the western United States, but also in western Canada, Taiwan, Iran, Rhodesia (now Zimbabwe), Zambia, and the Philippines, as well as in South America. Frank J. Trelease, *New Water Legislation: Drafting for Development, Efficient Allocation and Environmental Protection*, 12 LAND & WATER L. REV. 385, 415 (1977). However, Trelease's assertion is misleading. As Teclaff (whom Trelease cites as his source, *id.* at 415) makes clear, many administrative regimes of water law merely feature a general preference, *ceteris paribus*, for seniority of application or grant of authorization. *See Comparison of Legal Regimes, supra* note 71, at 81-83. Teclaff specifically notes that this feature has "little else in common with prior appropriation . . ." other than the occasional and superficial consideration of length of use. *Id.* at 82.

right in order of temporal priority: the last man to divert and make use of the stream is the first to have his supply cut off.<sup>86</sup>

In essence, prior appropriation is a first-in-time system. Whoever is lucky or resourceful enough to appropriate water early on gets the right to use the water virtually forever, as long as that user continues the beneficial use for which the appropriation was intended.<sup>87</sup> Beneficial use, like reasonable use, is subject to interpretation;<sup>88</sup> however, once beneficial use is established, a user's allotment is not subject to adjustment except in favor of senior users in time of shortage.<sup>89</sup>

In almost all prior appropriation jurisdictions, the doctrine has evolved into a permit scheme. Temporal priority still determines the rights of users, but the right is now initiated by application for a permit.<sup>90</sup> In addition, while a preference for domestic use is not inherent in the prior appropriation system, it does manifest itself in two ways. First, domestic water use is considered a per se beneficial use in almost all jurisdictions.<sup>91</sup> Second, many jurisdictions modify the pure temporal priority in favor of domestic users in time of scarcity.<sup>92</sup> In this way, the prior appropriation system can protect favored uses without abandoning the regime and without excessive administrative intervention.

### C. Administrative Allocation

The most commonly used system of water rights acquisition is the administrative allocation system.<sup>93</sup> While this system varies dramatically from one jurisdiction to another, the basic idea is quite simple. Under this regime, some kind of authorization from the government is necessary before any public water can be used.<sup>94</sup> This authorization usually

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86. NATIONAL WATER COMMISSION, A HISTORICAL AND FUNCTIONAL ANALYSIS OF THE APPROPRIATION SYSTEM, REP. NO. NWC-L-71-006, Legal Study no. 1, at 4 (1971) (primarily authored by Charles J. Meyers) [hereinafter NATIONAL WATER COMMISSION].

87. See, e.g., ARIZ. REV. STAT. ANN. § 45-141 (West 1994) (stating "[b]eneficial use shall be the basis, measure and limit to the use of water"); N.M. STAT. ANN. § 16(3) (Michie 1978) ("Beneficial use shall be the basis, the measure and the limit of the right to use water.").

88. For one definition, see COLO. REV. STAT. ANN. § 37-92-103(4) (West 1990) ("'Beneficial use' is the use of that amount of water that is reasonable and appropriate under reasonably efficient practices to accomplish without waste the purpose for which the appropriation is lawfully made . . .").

89. See *Comparison of Legal Regimes*, *supra* note 71, at 16.

90. GOULD, *supra* note 82, at 6.

91. See, e.g., S.D. CODIFIED LAWS § 46-1-5 (Michie 1987) (stating that "[i]t is the established policy of this state: (1) That the use of water for domestic purposes is the highest use of water and takes precedence over all appropriative rights . . .").

92. See, e.g., COLO. CONST. art. XVI, § 6.

93. See *Comparison of Legal Regimes*, *supra* note 71, at 18.

94. See *id.*



takes the form of a permit, which is short-term and easily revocable, or a concession, which grants long-term rights.<sup>95</sup> The administrative system has its roots in the Roman system of water law, which influenced most modern European systems of water law, which in turn influenced water law around the world.<sup>96</sup> Roman water law distinguished between public and private streams: "[a] stream was public if it was both perennial and a *flumen*, i.e. sizeable, and not merely a *rivus*, i.e. small."<sup>97</sup> The State also had "absolute rights" in navigable streams as well as in those streams that rendered another stream navigable.<sup>98</sup> Thus, according to Ludwik A. Teclaff, "Roman law recognized the right of the [State] to prohibit the use of any public water and required an authorization for taking water from navigable streams."<sup>99</sup>

The main variations in the administrative allocation regime relate to which waters are considered public and which, if any, are considered private. Some States, such as Israel and the former Soviet Union, solved the problem by essentially declaring all water, in whatever form, to be public water.<sup>100</sup> Most countries have taken a more moderate approach that vests rights to most important and easily usable water sources in the government, but allows certain minor water sources to remain private. For example, Spanish law limits private waters to flowing surface-waters that begin on private land for as long as they remain on such land, to standing water on private land, and to rainwater falling on private land; almost any use of public waters requires governmental authorization.<sup>101</sup> French law defines public streams as those that are navigable or have been deemed navigable; all other streams are private, and a riparian rights system pertains to these streams (although an authorization is necessary for any construction in the stream intended to divert water).<sup>102</sup> Italian law claims as public water, belonging to the State, all water which is useful to the public interest (for navigation, drinking water, irrigation, power production, or another beneficial purpose).<sup>103</sup> In South Africa, a stream is public if it has a permanent source and can be used in common; private streams are only those streams that

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95. *See id.*

96. *See* PRINCIPLES OF WATER LAW, *supra* note 32, at 65–66.

97. *See* VOS, *supra* note 73, at 1.

98. *See id.*

99. *Comparison of Legal Regimes*, *supra* note 71, at 19–20.

100. *See Comparison of Legal Regimes*, *supra* note 71, at 51–52 (discussing Israeli law); O.S. Kolbasov, *Soviet System of Water Law*, in PROCEEDINGS: INTERNATIONAL CONFERENCE ON GLOBAL WATER SYSTEMS 416, 419 (1976).

101. *See Comparison of Legal Regimes*, *supra* note 71, at 21–22.

102. *See id.* at 33–35.

103. *See* Dante A. Caponera, *Water Laws in Italy*, U.N. Food and Agriculture Organization Development Paper no. 22, at 3 (Feb. 1953) [hereinafter *Water Laws in Italy*].

are not susceptible to use by more than one user.<sup>104</sup> These examples all serve to illustrate the basic principles of administrative regimes: important sources of water are controlled by the State (minor sources of water that could not be effectively used by the public are often left in private hands); and the use of water from these sources is subject to State approval.

Another feature of administrative systems is the general permit requirement of beneficial use. Sometimes the definition of beneficial use is left open and can be adjusted as conditions require.<sup>105</sup> In other cases, statutes specifically outline the uses allowed, especially when large amounts of water are required.<sup>106</sup> Often, a statute ranks the priority of allowed uses. Kuwaiti law, for example, ranks priorities of water use as follows (from most to least preferred): human consumption, municipal and recreational, afforestation, industrial, agricultural, and private gardens.<sup>107</sup> This ranking illustrates a second feature of most administrative systems: a preference for domestic use. In some countries, such as Italy, this preference allows domestic users to escape administrative authorization altogether.<sup>108</sup>

#### D. *The Search for General Principles: The Three Regimes Compared*

Each regime of water law is different enough from the other regimes that no obviously common principles leap out. Many of their essential provisions, in fact, conflict. For example, under either the natural flow or reasonable use position, the riparian regime's requirements would preclude the water gluttony of an upstream senior user that is permitted—so long as the use is beneficial—under the prior appropriation doctrine. And the very notion of an administrative allocation regime is diametrically opposed to the vested and virtually indestructible rights of a senior user in a prior appropriation regime or to the focus on the property rights of waterside landowners in a riparian regime. However, there are certain aspects that all three regimes share. The first of these is beneficial use. The second is a preference for domestic use.<sup>109</sup> The application of each of these principles to iceberg acquisition is discussed below.

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104. See VOS, *supra* note 73, at 4–5.

105. See Dante A. Caponera, *Water Laws in Moslem Countries*, U.N. Food and Agriculture Organization Irrigation and Drainage Paper no. 20, at 79 (1973) [hereinafter *Moslem Countries*].

106. See, e.g., *Water Laws in Italy*, *supra* note 103, at 8.

107. See *Moslem Countries*, *supra* note 105, at 118.

108. See *Water Laws in Italy*, *supra* note 103, at 3.

109. See Ludwik A. Teclaff, *Legal and Institutional Responses to Growing Water Demand*, FAO Leg. Study no. 14, at 8 (1977) [hereinafter *Water Demand*].

#### IV. ICEBERG APPROPRIATION UNDER NATIONAL LAW REGIMES: ANALOGIES AND ANALYSES

The first question is whether icebergs "legally" can be appropriated at all, at least on the high seas. This note has obviously assumed a positive answer. There is certainly no specific prohibition on iceberg harvesting in international law. A general obligation not to cause harm<sup>110</sup> might limit particularly egregious cases of reckless use, although such a limit would go to particular methods of appropriation, rather than to appropriation per se. The general legal consensus appears to be that, "[d]ue to their discrete nature, icebergs, like fish, are subject to seizure and reduction to private possession."<sup>111</sup>

The next question relates to the applicability to iceberg acquisition of the few general principles of national water law identified above. The first principle, that of beneficial use, would seem to operate as a limit on the right to appropriate icebergs. Since the exact definition of beneficial use varies among legal systems, however, it is not obvious precisely which uses of an iceberg would be considered beneficial. At one extreme, it seems clear that international law would forbid a nation from towing an iceberg in order to flood or modify the climate of an enemy nation.<sup>112</sup> On the other end of the spectrum, use of iceberg meltwater for domestic, agricultural, or industrial purposes would probably qualify as beneficial use under any legal system. The permissibility of other uses, such as power generation or recreation, remains an open question and would probably vary depending on the general availability of, and competition for, iceberg resources.

110. See *Report of ILC*, *supra* at 62, art. 7, at 236-44.

111. Lundquist, *supra* note 3, at 23. A consistent but slightly different position is taken by Zuccaro, who argues that any property rights vested in a State are severed when the iceberg calves: "It then follows that in the absence of any such property rights, icebergs must be treated as *res nullius*. Consequently, they are capable of becoming objects of personalty upon possession by their first finder." E. A. Zuccaro, *Iceberg Appropriation and the Antarctic's Gordian Knot*, Comment, 9 CAL. W. INT'L L.J. 405, 419 (1979).

It is possible to argue that an iceberg that "calves" from the territory of a particular State remains the property of that State, even after it drifts out of the territorial sea or EEZ. In view of the administrative nightmare that would result from the need to record the provenience and track the progress of every commercially valuable iceberg, such an argument is unpersuasive. The prevailing legal view seems to be that large tabular icebergs become international property once they calve and drift out onto the high seas. See DEBORAH SHAPLEY, *ANTARCTICA IN A RESOURCE AGE* 93 (1985).

112. Such uses would be banned by, inter alia, the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, Dec. 10, 1976, 31 U.S.T. 333, 1108 U.N.T.S. 152. For a discussion of international law relating to environmental warfare, see generally Michael N. Schmitt, *Green War: An Assessment of the Environmental Law of International Armed Conflict*, 22 YALE J. INT'L L. 1 (1997).

The next principle, that of priority of domestic use (for which a permit is often not required), would appear to adapt well to iceberg acquisition: a scheme could simply permit the appropriation of icebergs for household use before they may be appropriated for any other uses. In essence, incorporating this priority into any regime for iceberg appropriation would allow unrestricted use of icebergs as a source of domestic water supply, whatever other restrictions they might be subject to. There are significant problems with this approach, however. Whereas normal domestic water use consists of only a fraction of the total amount appropriated, icebergs might be appropriated wholly for household water supply. Consequently, if the demand for suitable icebergs for domestic use exceeded the supply, the same problems would exist as if no domestic priority existed. If supply exceeded demand, the rule might have a chilling effect on beneficial use of icebergs for other than domestic purposes. The existence of a governing authority, or even a multi-tiered priority system, might serve to obviate these difficulties. Therefore, while a preference for domestic use could easily be incorporated into an iceberg appropriation regime, especially an administrative scheme, it would seem to be a problematic basis for a legal regime on its own.

Before examining the potential nature and consequences of iceberg appropriation under each type of legal regime discussed above in Part III, it is useful to discuss attributes desirable in any iceberg appropriation scheme. First, an easy case can be made for certainty, for protecting the right to icebergs and the potentially massive initial investment required before an iceberg can be utilized effectively. Many iceberg utilization proposals involve use of meltwater for irrigation in low lying, arid coastal areas. As one commentator has noted, "[t]his would require enormous investments for the creation, from scratch, of vast agricultural infrastructures depending entirely on reliable delivery of iceberg water. Any lengthy interruption of the water supply would cause a drought."<sup>113</sup> These problems would apply equally to domestic use in urban areas and have almost certainly contributed to the lack of attempts to tow and use icebergs. A legal regime providing certainty of rights would, therefore, both promote iceberg utilization and stave off the potentially devastating consequences of the cutoff of iceberg supplies to an established utilization infrastructure.

Another worthy policy objective is that of fairness, especially to poorer countries without access to the money or technology needed to tow and utilize icebergs or to land-locked countries without access to

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113. Bader, *supra* note 17, at 37.

seaports. These countries are often most in need of water resources, and denying them future as well as present access by vesting iceberg rights in richer countries would be manifestly inequitable.<sup>114</sup> The goal of fairness would seem to conflict with the goal of certainty, and thus the two objectives must be carefully balanced. It is possible, however, to imagine schemes in which these interests could be reconciled: for example, by conditioning a right to appropriate icebergs on the duty to share a portion of the resulting water with neighboring countries.<sup>115</sup>

Finally, it is also helpful to consider the goals of efficiency, practicability, and adaptability. Efficiency probably applies more to transport and use of icebergs than to their acquisition, but if iceberg utilization becomes widespread and iceberg shortages develop, an appropriation system might need to incorporate an evaluation of the efficiency of competing claimants. In addition, the sheer cost of iceberg transport will likely restrain inefficient uses. Practicability is to a large extent intuitive; common sense dictates that a regime is not desirable if it requires steps that are either highly impractical or that would defeat the purpose of the enterprise. Finally, adaptability is crucial for the simple reason that conditions change, and it is better to have a system that can adapt to changes than it is to have one that periodically requires massive overhaul.<sup>116</sup>

Keeping these goals in mind, the discussion now shifts to an examination of how iceberg appropriation might occur under each regime of national water law.

### A. Riparian Rights

The riparian rights regime does not lend itself easily to a regime of iceberg appropriation. The least problematic incarnation of such a regime would be to treat all coastal States as "riparian" to the world

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114. Fairness is not, of course, required in the formulation of international law. However, it certainly helps to garner the support of "have-not" nations for new legal regimes. The concept of fairness is not foreign to international law; the most striking example is the notion of certain resources, such as the international sea-bed or the moon, as part of the common heritage of humanity. See generally Bradley Larschan & Bonnie C. Brennan, *The Common Heritage of Mankind Principle in International Law*, 21 COLUM. J. TRANSNAT'L L. 305 (1983). However, a common heritage regime applied to icebergs would be likely to meet with vehement resistance. See Joyner, *supra* note 3, at 236-37.

115. One commentator suggests that iceberg harvesting "could become a very good illustration of effective and useful technology transfer" among nations. Chamoux, *supra* note 40, at 600. Technology transfer provisions have already debuted in the Law of the Sea provisions covering sea-bed mining. See generally YUWEN LI, *TRANSFER OF TECHNOLOGY FOR DEEP SEA-BED MINING: THE 1982 LAW OF THE SEA CONVENTION AND BEYOND* (1994).

116. For a comprehensive discussion of adaptability and water law, see *Water Demand*, *supra* note 109, at 4-9 (discussing the ideal of flexibility in law).

ocean. Under this system, such "riparian" States would have an equal right to acquire and use icebergs, subject to certain limits. Under the natural flow doctrine, icebergs could only be used for domestic purposes; under the reasonable use doctrine, icebergs could be acquired and used for any beneficial purpose, subject to other coastal States' right to acquire icebergs. Iceberg acquisition would probably also be subject to the general limits of reasonable and equitable use applicable to riparian States under international law.<sup>117</sup>

A riparian rights regime of iceberg acquisition would almost certainly be unworkable and undesirable. A natural flow limitation on iceberg appropriation would be bizarre and highly restrictive. Under such a limitation, an appropriator seemingly would be required to allow icebergs to drift naturally through the seas, taking only a small amount of ice which could be used solely for domestic purposes. The limits of reasonable use, which shift continuously according to the current situation, would create a system in which the right to appropriate icebergs is adaptable, but uncertain and unstable.<sup>118</sup> Under the reasonable use theory, actual use could potentially be relatively efficient, but the lack of certainty would discourage the large-scale investments needed for greatest efficiency. In addition, a riparian rights regime that excluded inland nations<sup>119</sup> would probably violate the Law of the Sea Convention, which guarantees land-locked States freedom of the high seas<sup>120</sup> and the right of access to and from the sea "for the purpose of exercising the rights provided for" in the Convention.<sup>121</sup> In this respect, a riparian regime would unfairly disadvantage inland States.

### B. Prior Appropriation

In an adaptation of the prior appropriation system for iceberg acquisition, States could win the right to appropriate icebergs in the future by making an initial appropriation and then putting that appropriation to beneficial use. One can imagine several potential permutations of such a system. One possibility would be to determine the amount of an appropriative right based on the total volume of water in the iceberg; a variation of this is to use the total amount of water yielded upon utilization of the iceberg, which will vary depending on the distance from the

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117. See *Report of ILC, supra* note 62.

118. See William L. Ziegler, *Water Use Under Common Law Doctrines*, in *WATER RESOURCES AND THE LAW* 49, 71 (1958) (discussing the uncertainty of water rights in the riparian system).

119. Which it must, by definition.

120. See *Law of the Sea, supra* note 34, art. 87.

121. *Id.*, art. 125.

harvest area to the point of use. Using this method, when a State first harvested an iceberg, it would acquire a right, subject to claims of senior appropriators, to an iceberg of that size every appropriation period. Of course, such an approach would lead to substantial problems involving measurement and oversight.

A second approach might be to give a senior user first pick of *any* iceberg, subject to the requirement of beneficial use. Because icebergs may be desirable for other reasons than volume—such as shape and ease of transportability—some appropriators might prefer this type of regime. Such an approach could be undesirable, however, because it would allow a lock-up of rights by allowing an initial appropriation of a small iceberg to establish the right to appropriate much larger icebergs in the future. Nevertheless, this approach might encourage investment in improved transport and utilization technology on the part of senior appropriators by providing guaranteed future access. A third possibility would be to combine these approaches, so that a senior appropriator would have first choice of icebergs of a certain size or within a range of sizes.

One problem with a prior appropriation regime would be the determination of the precise point at which appropriation occurs. Such a determination conceivably could be crucial to establishing priority. One approach might be to use the point at which the iceberg is reduced to usable form at the destination; however, this approach would disadvantage more northerly countries (assuming use of Antarctic icebergs). A second approach would be to use a modified rule of capture to determine the time of appropriation.<sup>122</sup>

Another problem with a prior appropriation regime would be the time period involved: iceberg appropriation could occur on a yearly basis, or more or less frequently. Yet, unlike the continuous diversion of a constantly running stream, icebergs can be harvested only one at a time. Junior appropriators, consequently, might have to forego opportunities to appropriate suitable icebergs in favor of seniors who may have no interest in harvesting an iceberg at that particular time. This could lead to waste and inefficiency, although effective communication between the parties could ameliorate this difficulty.<sup>123</sup>

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122. For the possible outlines and theoretical underpinnings of this approach, see the venerable cases of *Pierson v. Post*, 3 Cai. R. 175 (N.Y. Sup. Ct. 1805) (requiring capture; mere chase is insufficient); *Ghen v. Rich*, 8 F. 159 (D. Mass. 1881) (custom may determine when possession occurs).

123. One possible solution would be to allow common agents to harvest the icebergs. These agents could be paid (for services, not for the value of the iceberg) by the most senior user who wants the iceberg. Comments from Edward H. Cooper, Thomas M. Cooley Professor of Law, University of Michigan (April 1996) (on file with author).

The prior appropriation regime has further negatives. It might set off a struggle in which States race to stake out claims to the resource. Such a result would promote inefficiency by encouraging use of the resource before it is truly necessary. Since a prior appropriation regime provides no incentive for conservation or the introduction of new techniques, it might also promote frivolous or wasteful uses, although the requirement of beneficial use could act as a brake. It might even encourage a State to take drastic and harmful actions, such as blasting an iceshelf, to establish or exercise its claim of priority. Another significant problem with a prior appropriation regime is that it would be highly unfair to less-developed States with few financial and technological resources.<sup>124</sup> The regime is also relatively inflexible: rights vest in a particular, invariable order. Yet another problem is that the geographical range of the appropriation regime is currently very restricted; since prior appropriation is not widely practiced, nations that have no experience with this regime might be expected to resist its adoption on an international scale.<sup>125</sup> Finally, the ambiguity of the appropriation period could prevent informed planning and lead to undesirable uncertainty for junior appropriators.

Despite these serious flaws, a prior appropriation regime for iceberg acquisition would have several advantages. First, at least for senior appropriators, certainty of right would exist, thus promoting development: "[t]he [prior appropriation] system promotes investment by giving security of use."<sup>126</sup> In the sense that icebergs are wasted if left to drift and melt away, a prior appropriation system would promote beneficial use of icebergs.<sup>127</sup> Second, prior appropriation works well in the absence of a developed water distribution regime. While self-help enforcement might be required in the absence of an effective dispute settlement mechanism, the actual workings of prior appropriation require virtually no administrative interference.<sup>128</sup> Since no administrative body overseeing iceberg acquisition exists, prior appropriation appears the most workable regime under current conditions. Finally, the appropriation regime is adaptable enough to be converted to a permit or administrative regime in the future, as demonstrated by the fact that most prior appropriation jurisdictions have adopted permit schemes.<sup>129</sup> The persistence of prior

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124. This argument assumes that fairness ought to be a policy goal of international law. See *supra* note 114 and accompanying text.

125. Although the protection of prior uses is a component of many legal systems. See *supra* note 85 and accompanying text.

126. NATIONAL WATER COMMISSION, *supra* note 86, at 6.

127. In light of the unknown effects of icebergs on climate and ocean currents, see *supra* text accompanying notes 6–8, it is not entirely clear that icebergs *are* wasted when left to drift naturally.

128. See *Water Demand*, *supra* note 109, at 4.

129. See discussion *supra* at Part III.B.



rights in a permit system has caused problems, but these problems can be dealt with through a general assimilation of pre-existing uses into new systems.<sup>130</sup>

### C. Administrative Allocation

The obvious problem with an administrative regime for iceberg acquisition is the lack of an existing administrative apparatus. In order for a regime of administrative allocation to succeed, virtually all potential iceberg-acquiring States must agree on the form and identity of the administrative body. These States must also agree to abide by the administrator's decisions. Such a body might hold icebergs in trust for humanity or for all States<sup>131</sup> and dole out rights to iceberg acquisition based on established factors. Given the large number of parties and competing interests involved, such an agreement seems highly unlikely in the near future.

If an agreement were reached, however, and an administrative regime established, it could well be the most desirable regime for determining rights to iceberg acquisition. Administrative allocation could be flexible, modifying rights and adapting to new situations as they arise. On the other hand, an administrative regime could create certainty—although this would not be necessarily inherent in its scheme—by allowing long-term grants of permits or concessions, so that a State (or its citizens) could be assured of recovering its initial capital outlay. The regime's fairness would depend on the fairness of its administration, but it ought to be possible to build equity considerations into the regime. While the addition of an administrative middleman might tend to reduce the efficiency of iceberg utilization, the administrator could compensate for some of this reduction by allocating iceberg rights so as to maximize the overall efficiency of global iceberg appropriation operations. In addition to making decisions based on efficient allocation, the administrator could threaten a reduction or termination of a right if the water is used wastefully or inefficiently. Finally, after the initial organizational hurdle and given continued compliance—both admittedly large assumptions—an administrative regime would be quite practicable. Practicability could be increased by restricting the scope of administrative authority, for example, by dealing only with large, commercially valuable icebergs and classifying smaller icebergs as private

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130. See *Water Demand*, *supra* note 109, at 6–7.

131. Such a body might resemble the Authority created by Articles 137 and 140 of the Law of the Sea to govern exploitation of the international sea-bed. See *Law of the Sea*, *supra* note 34, arts. 137, 140. Indeed, the eventual existence of an analogous "International Iceberg Authority" has already been posited. See Joyner, *supra* note 3, at 236.

water, subject to a rule of capture or reasonable use. A final advantage of the administrative regime is that the concept is familiar to most legal systems, even those that otherwise use riparian or prior appropriation regimes.<sup>132</sup>

Another option for fitting iceberg appropriation into an administrative regime is to treat liquid fresh water in general throughout the world as public water, subject to regulation, as is already the case in most jurisdictions, but to consider icebergs as private water, subject to utilization without restriction or to a reasonable use limitation. This approach would have all the systemic disadvantages of the riparian and prior appropriation regimes with none of their advantages. As such, such an approach would be like having no regime at all.

### CONCLUSION

The legal regime under which icebergs may be appropriated is unclear. Neither international law nor the general principles shared by the three national water regimes provide an obvious basis for an international regime of iceberg appropriation. Looking to the essential principles of each type of water law, and applying them, by analogy, to iceberg appropriation, results in three potential regimes. Each has particular advantages and disadvantages. An administrative allocation regime is most desirable, but is unlikely to take shape easily. The regime of prior appropriation has distinct and serious disadvantages, but may be necessary to initiate widespread investment in iceberg utilization technologies. A riparian rights regime would be impracticable in the context of iceberg acquisition. In any case, in the absence of other guidance, and in combination with existing rules of international law, an examination of these regimes acts only as a framework to help address an undecided, and as yet unripe, question of law.

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132. See *supra* text accompanying note 93.